IOT Based Vehicle Accident Prevention And Detection Using Alcohol Sensor

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Abstract- *Now-a-days a many number of accidents have occurred while drinking and driving. Drunk drivers who drive recklessly often drive recklessly and at high speeds in such a dizziness and instability that they endanger their own lives as well as other road users. This issue has no limits. Many laws have been enacted in India on the grounds that it prohibits motorists from drinking and driving, and these sanctions include arrests and prosecution of criminals. But these laws are so poor that they do not affect people and make the same mistake and also endanger people's lives.*

Keywords- sensor, accident, information, drivers

I. INTRODUCTION

Now-a-days a large number of accidents have occurred while drinking and driving. Drunk drivers who drive recklessly often drive recklessly and at high speeds in such a dizziness and instability that they endanger their own lives as well as other road users. This issue has no limits. Many laws have been enacted in India on the grounds that it prohibits motorists from drinking and driving, and these sanctions include arrests and prosecution of criminals. But these laws are so poor that they do not affect people and make the same mistake and also endanger people's lives.

According to the Department of Road Transport and Highways, road accidents from 2010-2019 are reported as follows: In Figure 1 we can see that although accidents are reduced but the number of people who lose their lives is higher, apart from the accidents caused by excessive running people and driving are the main causes of accidents and no significant deaths, and that motivated us to do these project. The Druken Driven Protection System used an alcohol sensor in a protective helmet to detect alcohol progressively. The IR sensor is assisted in determining whether a person is wearing a helmet or not. If the alcohol sensor or IR sensor detects, the buzzer will startle and lock the engine. There is also a GPS navigation receiver in the car that sends information to their relatives or friends.

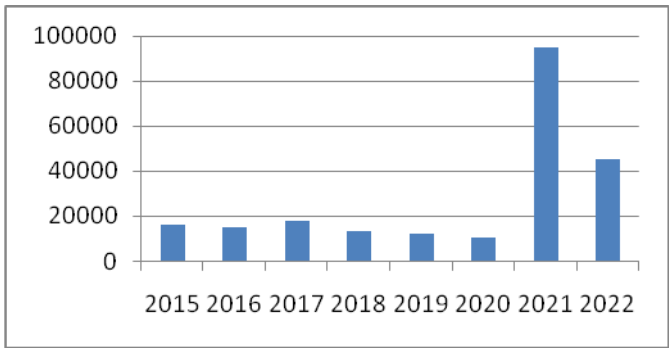

Fig.1BarGraphrepresentingtheaccidents

Automatic drunken drive prevention system, Integrated with navigator wheel. Ethanol is used here because it has a lot of InfraRed radiation activity. Therefore, we are free to use the IR Sensor mounted on the wheel navigator. The IR led-894 source gives IR power to the sensor. When IR radiation is interrupted by the absorption of alcohol, the transmission circuit automatically shuts off. This transmission circuit has control over the fuel supply system and stops the supply of fuel to the engine. This causes the car to come to a complete stop. As I ethanol concentration increases, infrared absorption occurs more frequently

Drunk Road Accident Prevention System has developed a mechatronic system with MQ-2 sensors that can detect alcohol while breathing. It is done by making a combination of an alcohol sensor and a microcontroller. A prototype fuel system with spark plugs was created to function as a ignition system. Blood Alcohol Content is the key or parameter of the system. 0.08mg / L is the standard limit for illegal use as per the government and is used as a limit for this project as well. The great advantage of paper is that it analyzes faster and more accurate than other techniques. Programmed Engine Locking System By Automatically Identifying Drunk Drivers using MQ-3 alcohol sensor to detect alcohol level in a person. It is used to lock the engine so that a drunk can not drive a car. But the main drawback to this sensor is that it cannot detect it while riding in a car. Thus, a person may drink after unlocking the vehicle.

Automatic Vehicle Control System for Drug Prevention and Driving Using Visual Aids .It is used with visible instruments and makes a system. Previous models and respiratory analysts show only alcohol level but the information is not reserved for other purposes and the data is also slightly accessible.

Alcohol discovery and car lock system. Arduino-based risk prevention findings are discussed. Here the AT89S51 is employed as a Microcontroller Unit (MCU) operating due to the heart of the system. The program performs 2 tasks, one for police investigations and the other for further development. the process starts when the drivers have taken over the area where the alcohol level will be determined because the local sensor element is active. If it detects that the liquor is in use, the vehicle will not be able to operate if the driver ignores the command and tries to start the vehicle as soon as possible. The ignition can only start if the key touches the positive and negative terminals with a low o / p in the key terminal, the key fails to complete the circuit wherever it leads to disconnection of the engine. So the engine shuts off or does not start betting in the car park. downside: The supply of fuel for a straight stop and a roadblock where alcohol is found is also dangerous as the driver is driving at high speed and should cause an accident.

The main hardware components of our proposed system are the built-in MQ-3 Alcohol sensor, LCD, ATmega328 Microcontroller with dual LED, Buzzer and DC motor. Proteus VSM template used for design simulation design. The software code was written in the Arduino IDE diagram and burned in Arduino. So our proposed system reduces the number of accidents and fatalities due to alcohol consumption, in the coming days to a large extent. An intelligent system is built that monitors continuously different car parameters from time to time and store and send data to the site using the Arduino hardware and MQ-3 Hardware sensor. Our proposed system not only interacts with the primary data base but also controls various parameters. The main advantage of the system is that it is small in size and has good reliability. The future vision of our system is that it can control accidents and can provide useful information about vehicles and can reduce the number of accidents caused by drunkenness and driving. Using our automotive systems will be a new phenomenon in automotive technology by adding a safety feature, thus bringing about new developments in the automotive industry.

III. DESIGN CONCEPT

With the design concept of the system, we have used the Top Down operating system where all system operations can be properly defined. This system design consists of various block units as shown in Fig.2.The system development is divided into:

- Sensor information
- Impulse Generation
- Arduino control
- Engine Lock

Sensitive Information is converted into impulses and supplied to Arduino where Arduino controls the car engine with a given code and a given alcohol level

A. Arduino ATMEGA328

The ATmega328 Arduino Uno microcontroller board is used in the design system. Fourteen anchors are present in the unit, which allows the inlet and outlet of the feed, the Universal Serial Bus port, 6 continuous signals with variable timing, on-board power supply, 16 Mega Hertz electronic oscillator, power connector, ICSP header, and and the reset button. The Atmega328 microcontroller has 32 Kilo Bytes flash memory, 1 Kilo Bytes EEPROM and 2 Kilo Bytes SRAM.

B. Alcohol Sensor MQ-3

The sensitive layer of Tin Dioxide (SnO2) is used to make the sensor. Itis has less sensitivity to Benzene and sensitivity to alcohol. It has an improved cycle, better health and faster response. The design of the analog interface is used for hearing. The sensory pins represent 1, 2-down and 3-power. Specific sensor technology specifications are displayed. As specified in the data set, we use a 200k ohm Resistor and a sensor.

C. Power supply

A 5V adapter is used to power the controller and another part of the system.

D. Ignition System

The ignition system helps start the engine. It should provide a good spark between the electrode plugs at the right time. Typical power requirements depend on the pressure rating and operating conditions of the engine.

E. LCD display

Liquid crystal screen displays an electronic screen and contains a variety of applications. A commonly used 16x2

LCD screen is a module used in various circuits and devices. These modules are selected into seven segments and LEDs of various segments. The reason is: LCDs can be easily adjusted; saving; does not have the capabilities for computing and contrasting characters (unlike 7 segments), power and more. 16 characters per row are displayed on a 16x2 LCD and there are 2 such segments. Each character is betrayed with a 5x7 pixel grid on this LCD. This LCD contains 2 registers, namely data and command. Command instructions are kept in the command registers provided for the LCD. To perform the function described in advance the command instructions are given to the LCD to clear its screen, use it, direct the display, locate the location where the cursor is placed etc. The data to be displayed on the LCD is stored in the data registers. The data is in the form of an ASCII number of characters to be displayed on the LCD.

F. Buzzer

Buzzer is a sound signing program. It can be mechanical, electromechanical, electromagnetic, acousmatic or piezoelectric phonic signaling system. A piezoelectric buzzer can be navigated by an oscillating electric circuit or other sound signal signal. The sound of pop can mean that the toggler is caught.

G. DC Motor

The DC motor is a DC electric motor used to ensure the abstract of padlocking engine. In this case, the engine will be connected to the 9 pin on the microcontroller, the DC engine stops when the alcohol is heard and when there is no alcohol it hears the DC motor continue to operate.

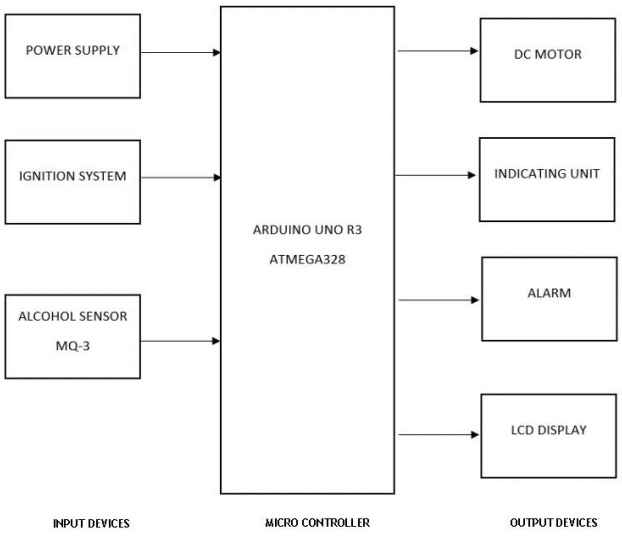

Fig.2 Conceptual Design of Drunk and drive Controller

III. IMPLEMENTATION

There are three main steps in the system algorithm. The first to strengthen the system, the next is the rating system, this section checks the alcohol level of the drivers. The input controller is provided with a set distance range, the vehicle will not start once the alcohol level has exceeded the range. The microcontroller reads the electrical values recognized as analog by nature, the Uno Arduino board typically consists of 8 channels, the device has 10 bits, which were used to deliver output as digital digits by analyzing the analog voltage to the pin. The system flow chart is described in Fig.3.

Figure 3 System Implementation

The device is connected to a load input voltage ranging from 0-5V and output values ranging from 0-1023volts to deliver approximately 5volts of voltage across a circuit of all 1024 units. The system will call the Analog signal and convert it to a digital value of 0/1. Also, the analog values to be taken from the alcohol sensor will be is calculated and converted to the average percentage, and this average percentage is considered to be the same in the analog electricity values naturally in ppm (Partial Quarterly). We included three categories of people based on different levels of alcohol consumption. The first condition is treated as dehydration; the second stage is the moderate stage of intoxication and the final stage is the stage of intoxication. Each division will have an operating system based on the level of alcohol consumption. In the first phase of the drinking phase, only the Light Emitting Diode (LED) indicator will be turned on and the buzzer will be turned off and the car will be turned on due to low alcohol consumption which is not likely

to be dangerous. In the second phase, the green buzzer and the Green Emitting Diode LED) will be turned on, in addition to the car engine. Eventually, the sailor can no longer function mentally and physically in the third stage, so the engine will shut down, while the buzzer and red LED will be turned on due to excessive alcohol consumption. Therefore, if the system detected alcohol in the third phase, the vehicle would arrive at the rest area and the sailor would have to be in the same position as the one already parked in the parking lot.

A. Software Implementation

The software plan for this includes a free operating system that uses a load input signal from the alcohol sensor device and specific system units. Contains an LCD display, DC motor and buzzer unit. The software code is written in Arduino sketch and will be embedded in the ATMEGA328 microcontroller system memory using the Arduino development board. The hex decimal file is created using the Arduino IDE drawing environment. Fig.4 below represents the system system used for this study

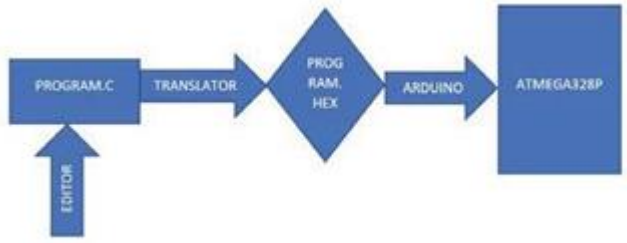

Fig.4SoftwareImplementation

B. Circuit Diagram

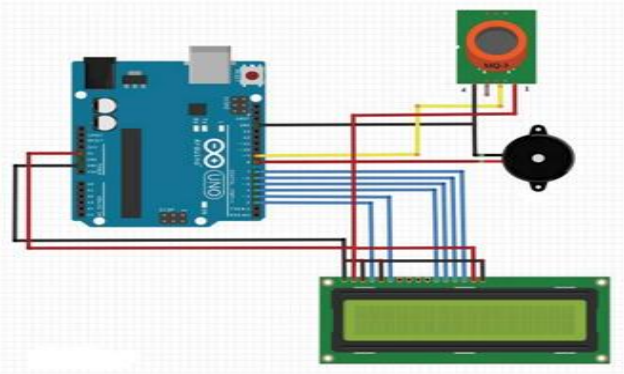

Fig.5 Circuit Diagram

Fig.5 represents the circuit diagram of the project.

VI. CONCLUSION

We had proposed a system that detects alcohol in the air of a car driver by stopping the car to move and reducing the risk to human life. The system came to life using the Arduino ATmega328 microcontroller and active sensors. Repeated device testing and testing have shown that sensors, Arduino and relays provide quick response when content is detected. Another feature of the system is that the alcohol sensor can operate for a long time and can detect from a range of 2 meters as well. By using Internet of Things (IoT)we have created a road safety feature that can be used in a smart city or somewhere. The proposed system not only locks the car in case of intoxication and drivers but also shows the police authorities the area of the closed car by installing a GSM module. The proposed system is good enough to shut down and get a pick-up point on drunk and drive vehicle.

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